REMARKS

Reconsideration of this application, as amended, is respectfully requested.

THE CLAIMS

The claims have been amended to make some minor grammatical improvements and to correct some minor antecedent basis problems so as to put them in better form for issuance in a U.S. patent.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

It is respectfully submitted, moreover, that the amendments to the claims are not related to patentability, and do not narrow the scope of the claims either literally or under the doctrine of equivalents.

THE PRIOR ART REJECTION

Claims 1-2 were rejected under 35 USC 102 as being anticipated by JP 05-172791 ("Yashima"). This rejection, however, is respectfully traversed.

Conventional ultrasonic inspection methods for inspecting weld pieces transmit ultrasonic pulses to a weld piece and measure echoes reflected from flaws/cracks in the weld. To specifically determine the position and magnitude of such a flaw/crack, the reflected maximum echoes captured at substantially the center axis of the ultrasonic beam are measured.

Yashima uses this method by: comparing the echo level specific to the position of flaws such as fatigue cracks and the echo height from a crack that generates weld defects and spherical blowholes, evaluating the differences as a unique phenomenon, and detecting the presence/absence of fatigue cracks.

By contrast, according to the present invention as recited in claim 1, ultrasonic pulses are transmitted with a probe to the slit of a plurality of test pieces, including a basic test piece, and echoes are measured with said probe while positioning the probe at a plurality of measuring positions of each of the test pieces. As recited in claim 1, each of the test pieces has a slit with substantially a same shape as a slit in the weld zone of the actual piece to be measured, and the slit of each of the test pieces has a different height. A measuring position is determined where an echo height extracted from a measured echo of the basic test piece is clearly distinguishable from echo heights extracted from measured echoes of other test pieces at the measuring position, and then master data is provided based on the echo heights extracted from the measured echoes of each of the test pieces at the determined measuring position. The probe is then located at the determined measuring position on the flange or the web of the actual piece to be measured, and ultrasonic pulses are transmitted with the probe to the slit in the weld zone of the actual piece to be measured. Echoes are measured with the probe at a plurality of positions on the flange or the web, and the measured echoes returned from the weld zone are compared with the master data. The welding condition at the weld zone is then determined based on the comparison.

The technique of the claimed present invention is premised on the finding by the inventors that the ultrasonic beam transmitted into cracks, etc., to determine the size or height of fine flaws can by itself distinguish and classify echoes reflected from the cracks by their size. And it is respectfully submitted that the method of the claimed present invention is not at all disclosed, taught or suggested by the conventional technology that utilizes the maximum echo data.

In particular, it is respectfully submitted that Yashima clearly does not disclose, teach or suggest preparing and measuring slits in test pieces and analyzing the measured data to provide master data as recited in claim 1.

In addition, it is respectfully submitted that Yashima clearly does not disclose, teach or suggest determining a welding condition at the weld zone of an actual measured piece based on the master data as recited in claim 1.

In view of the foregoing, it is respectfully submitted that the present invention as recited in claim 1 and claim 2 depending therefrom clearly patentably distinguishes over Yashima under 35 USC 102.

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Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

/Douglas Holtz/

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